

COMPOSITE PACKAGE FOR CONTAINING AND DISPLAYING ARTICLES

BACKGROUND OF THE INVENTION

This invention relates to packaging, and more particularly to paperboard and plastic composite package structures that combine an intricate thermoformed tray with a paperboard base or cover.

It is known in the field of composite package structures to make use of a thermoformed inner tray with a paperboard base or cover. Such structures of this type, generally, provide a lightweight package with a good printing surface on the outside of the package. An example of such structures is U.S. Pat. No. 5,775,512 ('512) to Jones, entitled "Composite Package Structure for Containing Articles and Method for Producing Thereof." The '512 patent teaches a paperboard cover, a plastic inner tray, and a flexible spine that allows the package to be folded like a book. The tray is made of a polymer that can be thermoformed to hold a variety of articles such as compact discs, DVD's, and various children's toys. The paperboard cover functions as a base to provide structure for the polymer tray, and also provides a surface for the addition of printable graphics.

It is often the case that the article to be contained within the package also contains one or more surfaces that include printable graphics. Compact discs, for example, generally have a printed surface with a listing of the track titles or a selection of artwork, and children's books with colorfully illustrated covers often come with additional accessories that require additional packaging. Due to the nature of the composite package structure, particularly the paperboard cover, the articles and any graphics printed on the actual articles are often not seen by a consumer until the product has been purchased and the package has been opened. The exterior surface of the paperboard provides a location to print graphics that will indicate the

nature of the products inside, but often this simply results in the same images being printed twice, both on the paperboard cover and the actual article.

A number of structural problems also exist in the typical composite package design. Particularly, binding and tearing often occur in the area of the flexible spine when the packages are repeatedly opened and closed. This is due to the dual layering of paperboard and polymer, because the paperboard is forced to stretch around the inner polymer tray in the area of the spine when the package is closed. The '512 patent teaches that the paperboard should be adhered to the polymer tray in the location of the spine to provide strength and structure for the package. While it is true that some added strength will result from this, it also causes the paperboard and polymer to pull against each other and often prevents the package from closing properly, especially after numerous repetitions of opening and closing. U.S. Pat. No. 4,724,957 to Burcshweiger shows an extra radius in the paperboard in the area of the spine, such that the paperboard will not be stretched over the polymer when the package is closed. This design may eliminate the tearing and binding problems, but loses some of the structure that the composite package design was intended to provide, along with making a more cumbersome package.

#### SUMMARY OF THE INVENTION

The aforementioned problems are overcome by the present invention wherein a composite package structure is provided with a cut-out in the paperboard cover that exposes the transparent polymeric tray underneath, making the article inside and any graphics on it visible from the exterior. In addition, the package is provided with a number of alterations to the typical spine design that prevent the package from tearing or binding when closed without giving up structure or visual appeal.

In the preferred embodiment, the package is a book-like package having a paperboard cover and a thermoformable polymeric tray. The base is thermoformed to provide one or more recesses to receive an article. One or more cut-outs are provided in the paperboard cover, corresponding with the locations of the article recess in the polymeric tray. The tray is preferably a transparent polymer, such that the article may be seen through the cut-out and the tray when the package is closed.

In another preferred embodiment, a pair of notches in the polymeric tray are provided at opposing ends of the spine. The notches are cut from the tray only, so that the paperboard cover extends beyond the polymeric tray at the ends of the spine. The notches provide relief from the stretching of the paperboard at the ends of the spine, the most common location for tears to initiate. The visual appearance of the package is not altered because the paperboard cover hides the notches, and minimal structure is lost because only a small portion of the polymer is removed.

In another preferred embodiment, the polymeric tray is not glued or attached to the paperboard cover in any manner in the location of the spine. This allows the tray to buckle slightly at the spine in relation to the paperboard, so that the paperboard does not have to stretch as far around the polymer while allowing the package to close without binding.

The present design therefore provides a number of advantages. First, it allows a viewer to see a product and any graphics on the product while it is still in the package. Second, it maintains a paperboard cover for structural support and as an additional location for including graphics. Third, it reduces binding and tearing of the paperboard cover while maintaining structural and aesthetic qualities.

These and other objects, advantages, and features of the invention will be readily understood and appreciated by reference to the detailed description of the preferred embodiment and the drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of the package in a closed position.

Fig. 2 is a side view of a portion of the package in the closed position showing the area of the spine.

Fig. 3 is a perspective view of the package in the open position.

Fig. 4 is a side view of a portion of the package in the open position showing the area of the spine.

Fig. 5 is a perspective view of a portion of the package in the open position showing the area of the spine.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A composite package for containing and displaying articles is shown in Fig. 1 and generally designated 10. As illustrated, the composite package 10 is generally a book-like package that includes a paperboard cover 12 and a polymeric tray 14. The cover 12 is attached to the polymeric tray 14 and defines at least one cut-out 22. The polymeric tray 14 is generally transparent or translucent. It is attached to the cover 12 with a conventional adhesive, such as a heat-activated adhesive. The tray 14 includes one or more recesses 20 for holding a variety of articles (not shown) such as a book accompanied by a computer cartridge, or for providing structural support. The tray 14 also includes a flexible spine 24 that allows the book-like package 10 to close. The spine 24 includes opposing notches 26 at the ends and is not adhered to the cover 12. In operation, the package 10 closes such that the cover 12 is on the outside and the

tray 14 is on the inside. Any article that is enclosed within the recess 20 is visible through the cut-out 22 and the transparent tray 14, as well as through the top, bottom or sides. The notches 26 and the lack of adhesive on the spine 24 reduce the tendency of the cover 12 to bind or tear when the package 10 is closed.

The paperboard cover 12 is generally made from a cardboard material or the like, and preferably cut into a rectangular shape or another shape that can be folded like a book. Shown in Fig. 1, the cover 12 includes a first major surface 16 that is conventionally adapted to receive printed graphics, and a second major surface 18 (shown in Fig. 5) that is capable of receiving a conventional adhesive and may also receive printed graphics. The surfaces 16 and 18 may or may not include a coating such as a varnish or other commonly used paperboard coating. Referring now to Fig. 3, the cover 12 also preferably includes upper and lower edges 32 and 34 and lateral edges 36 and 38. A pair of parallel score lines 40 are preferably included at approximately half the distance between the lateral edges 36 and 38 so that the cover 12 may fold when the package 10 is closed.

In a preferred embodiment, the cover 12 further includes at least one cut-out 22. The cut-out 22 is generally located substantially between the score lines 40 and one of the lateral edges 36 or 38. The shape of the cut-out 22 is generally designed to match the shape of an article that will be held and displayed in the package 10, but may be any desired shape and may be large enough to reveal more than one article. An additional cut-out (not shown) can be defined in the spine region to permit viewing of the article through the spine.

The tray 14 is preferably constructed of a polymer such as polyvinyl chloride (PVC), Barex®, copolyester, or any other plastic material that can be thermoformed to create a tray shaped to match the article of interest (not shown). The polymer is preferably at least

partially transparent (i.e. transparent or translucent). Shown in Fig. 3, the tray 14 is preferably rectangular in shape and has generally the same the same perimeter dimensions as paperboard cover 12. The tray 14 may, however, be other shapes depending on the desired function and the products to be held in the package 10. The rectangle is divided approximately down the middle by a flexible spine 24. The spine 24 essentially divides the tray 14 into a first half 15 and a second half 17. Each half 15, 17 includes a peripheral flange 50 extending around the perimeter and a wall 51 defined by the flange 50 extending up from the flange 50 like a stair step. An additional step 52 is included on one half (shown on half 17 in Fig. 3) that will fit into a complementary recess 54 on the opposing half 15. Also shown in Fig. 3, protrusions 56 and catches 58 may also be included for holding the package 10 closed. In use, the protrusions 56 and catches 58 frictionally interfit when the package 10 is closed to retain the package 10 in the closed position. The tray 14 also preferably includes at least one recess 20 molded into the plastic to match the shape of the article, such as a computer cartridge, to be held in the package 10. In the embodiment as illustrated in Fig. 3, a number of article holding recesses 20 are shown on half 17, these recesses 20 may all be used for holding articles or may simply provide structural support. Additional articles, such as a book, may be held in recess 54 of half 15. Half 17 may additionally include a recess 60 to accommodate the spine of a book held in recess 54. Each recess may include a cut-out 62 to facilitate removal of the article.

The spine 24 is preferably a pair of parallel hinges 46 in the tray 14. The location of the spine 24 preferably corresponds with the location of the score lines 40 in the cover 12. As shown in Fig. 4, the hinges 46 preferably include a radius 48 that allow the spine 24 to buckle slightly in relation to the tray 14 when the package 10 is closed. In a preferred embodiment, shown in Fig. 5, the spine 24 has opposing ends 56 that do not extend to the edges 32 and 34 of

the paperboard cover 12. The ends 56 are cut back from the edges 32 and 34 a substantial distance, forming opposing notches 26. The flange 50 is therefore interrupted in the location of the notches 26. Alternatively, the perimeter flange 50 may not extend to the edges 32 and 34, leaving a substantial portion of the cover 12 extending past the edge of the tray 14, particularly in the area of the spine 24.

The paperboard cover 12 and polymeric tray 14 are attached with a conventional adhesive. In a preferred embodiment, the adhesive is an RF seal wherein heat is applied through the polymeric tray 14. The adhesive may be applied in any location where the tray 14 and the cover 12 are in contact, but it is preferably applied between the cover 12 and the peripheral flange 50. In another preferred embodiment the adhesive is not applied to the area of the flexible spine 24.

In operation, an article, for instance a computer cartridge (not shown), or plurality of articles, is placed into one or more of the article holding recesses 20 when the package 10 is in the open position as in Fig. 3. An additional article, such as a book, may be placed in recess 54. The articles may contain printed graphics. The package 10 is then folded about the flexible spine 24 into a closed position as in Fig. 1. When the package 10 is closed, the articles inside are visible through the transparent tray 14 and the cut-out 22. The opposing notches 26 provide relief to the cover 12 as it stretches around the spine 24, and the spine 24 buckles slightly to provide further relief. More specifically, the absence of the spine at the edges of paperboard reduces the tendency of the paperboard to tear at the edges, a location where tearing commonly initiates. The alternative embodiment mentioned above also achieves this result by having a tray 14 that does not extend all the way to the peripheral edges 32 and 34 of the paperboard 12, at least in the area of the spine 24.

The above description is that of a preferred embodiment of the invention. Various alterations and changes can be made without departing from the spirit and broader aspects of the invention as defined in the appended claims, which are to be interpreted in accordance with the principles of patent law including the doctrine of equivalents. Any reference to claim elements in the singular, for example, using the articles “a,” “an,” “the” or “said,” is not to be construed as limiting the element to the singular.